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POWDER-POST BEETLES AND THEIR CONTROL

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Powder-post beetles form a most important group of insects from an economic point of view. As the name implies, these are insects that attack wood and reduce it to a powderlike condition. The interior of the wood is honeycombed by irregular burrows made by the young, or larvae, and when badly damaged, the wood isconverted into a mass of closely packed material that readily crumbles into fine flourlike powder or coarser, more or less definite pellets of excreted wood. This material is held together by a thin outer shell and intervening fibers of sound wood. Since the larvae work in the interior of the wood, considerable damage may occur before its discovery. Presence of the insects is usually betrayed by the small piles of powder expelled by the larvae.

Powder-post beetles attack green, seasoning, and seasoned lumber, the woodwork of buildings, furniture, stored military equipment such as gun-stock blanks, cots, tent stakes, and wooden airplane stock, implement handles, wagon spokes, oars, and a wide variety of wooden articles. In fact, practically all seasoned wood is subject to injury by these beetles unless it has been treated to prevent attack.

The direct loss caused by powder-post beetles to cut timber and lumber mounts to an enormous aggregate. Of course, damage to seasoned wood products results in relatively greater losses than to green stock, since the additional cost of seasoning must be added, as well as lost time and storage space. Where the articles are injured after being manufactured and put in place, the cost of replacement involves additonal expenditure of time and labor as well as of the cost of the original product; this loss is far greater than that of the raw material. It is this injury to the finished products that is here considered.

At least 6 families of powder-post beetles are responsible for damage to buildings, furniture, implement handles, and other seasoned wood products. In the order of importance in buildings, these families are Anobiidae, Cerambycidae, Lyctidae, Bostrichidae, Curculionidae, and Ptinidae. In the United States these 6 familes are represented by at least 38 species that cause such damage.

Many of these beetles are cosmopolitan in distribution, having been transported from one country to another in articles of commerce. In not all cases, however, have the beetles become established in these other countries.

Family Anobiidae

Anobiid beetles, of both European and native origin, attack the sapwood of seasoned softwoods and hardwoods; a common native species is Nicobium hirtum. The eggs are laid in joints or crevices in timber or in old exit holes made by the adults. Damage consists of small circular holes 1/16 to 1/8 inch in diameter, and irregular burrows which are filled with digested wood excreted in the form of fine flourlike powder or of more or less definite pellets of various shapes and sizes. Superficially the pellets of some of the anobiids resemble those of drywood termites. A close examination, however, will reveal that pellets of dry-wood termites are sculptured or marked with longitudinal depression which are not found in pellets of anobiids. Another striking difference in characteristic damage is the large, clean tunnel of dry-wood termites as contrasted to the powder-filled tunnel of the anobiids.

Injury by both native and introduced species to the woodwork of buildings and furniture is much greater in hot and humid climates such as occur about the Gulf Coast areas of our Southern States. Damage to buildings and imported furniture often is common in the Latin quarters of such cities as Tampa, Fla., and New Orleans, La. Damage also occurs in the Northern States.

One of the most commonly known of the anobiid beetles is the so-called European death-wathh beetle. Another member of this group is the Furniture beetle of Europe, which is present in the NewEngland States.

It was the death-wathch beetle that caused such serious damage to the ancient and historic Westminster Hall in England. The construction of this hall was begun in 1097, and the parts damaged were the old oak rafters of the roof, built in 1399 and considered one of the finest examples of ancient carpentry and wood engraving. The insect work was continued over a period of 400 years.

Other old buildings have been similarly damaged, both in this country and abroad, since this insect has been introduced into this country through commerce.

Family Cerambycidae

The roundheaded borers make oval holes from 1/8 to 1/4 inch in diameter and irregular burrows that are tightly packed with either coarse, powdery frass or flourlike powder. Such holes, in the heartwood and sapwood of ash, are caused by the ash borer, a species of Neoclytus. These insects attack freshly cut timbers, and narrow strips of bark left on the edges of boards or timbers permit the insects to lay their eggs between the bark and the wood. When infested logs or lumber is stored, the borers continue to work for several years.

Family Cerambycidae (cont'd)

Irregular oval holes from 1/4 to 1/2 inch in diameter, filled with a mixture of coarse, granular and ine powdery frass, found in seasoned softwoods, are caused by the old house borer, Hylotrupes bajulus. This borer usually attacks only well-seasoned sapwood which has been stored or in use for more than a year, and is probably the borer most frequently found damaging the woodwork of buildings. This borer has a long life cycle and continues to work for years, until the wood is thoroughly perforated. While bark is not necessary for egg laying, it leads to attack, hence all bark edges should be removed from lumber and timbers.

A beetle whose larvae work in seasoned hardwoods is Smodicum cucujiforme (Say), often called the flat oak borer. The adult is slender, flat, and light brown. It causes a considerable amount of damage to lumber in the Gulf States. Its work resembles that of the Lyctus beetle.

Family Lyctidae

Lyctus powder-post beetles attack the sapwood of seasoning and seasoned hardwoods, especially oak, hickory, pecan, and ash, maple and walnut, making circular holes 1/16 to 1/12 inch in diameter. The eggs are laid in the pores of the wood. The larvae feed on the starch content of the wood. The irregular burrows are filled with fine flourlike powder which the larvae kick from the tunnels. This insect is found most commonly in lumber, implement handles, and wooden military supplies that have been stored for more than 8 or 10 months, as well as in the interior woodwork of buildings and in furniture. Lyctus planicollis Lec., which has a life cycle of approximately 9 months, is one of the common species of the Southern States. Lyctus parallelopipedus (Melsch.), with a life cycle of slightly over 3 months, is another common species. As household pests, these beetles more often injure furniture than the woodwork of the building.

Family Bostrichidae

Damage by bostrichid beetles consists of circular holes 1/8 to 3/8 inch in diameter and irregular longitudinal burrows filled with fine or coarse frass in the sapwood of both softwoods and hardwoods. Wood used in the manufacture of furniture is subject to attack. The soft cores of basswood, used in furniture veneers, are subject to severe injury caused by the Pacific Coast beetle, Polycaon stouti. Partially seasoned wood or wood containing more moisture than that in an air-dried condition is preferred. The eggs are laid within the wood from holes made by the adult. A common and destructive species found in rustic furniture made of hickory, elm and oak, is the red-shouldered shot-hole borer, Xylobiops basilaris (Say).

Family Curculionidae

Cossonids, which are snout beetles, sometimes cause injury to the woodwork of buildings. These are small beetles that work in the interior of softwoods. Badly damaged wood has a honeycombed appearance, with the irregular tunnels filled with fine powdery or granular boring dust. Such a beetle, Hexarthrum ulkei Horn, once badly damaged the pine timbers of the White House roof at Washington, D. C. In May 1927 this injury was found during the course of repair work, but the damage had been going on for a long period. The ends of timbers forming trusses over the north portico were badly decayed, and they also had been damaged seriously by the cossonid beetles. While little decay was discovered in the timbers of the main roof, there were indications that some of these had been attacked by the beetles.

Family Ptinidae

Work of beetles of the family Ptinidae is similar to that of the Lyctus beetles except that both seasoned softwoods and seasoned hardwoods are attacked. Occasionally these beetles, particularly Ptinus brunneus Dufts, infest the woodwork of old outbuildings.